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Remarks

The above Amendments and these Remarks are in reply to the Office Action mailed August 6, 2003.

I. Summary of Examiner's Rejections

Prior to the Office Action mailed August 6, 2003, Claims 1-14, 16-17, and 19-22 were pending in the Application. In the Office Action mailed August 6, 2003, Claims 1, 4-11, 13-14, 16-17, 19, and 21-22 were rejected under 35 U.S.C. § 102(e) as being anticipated by Levinson et al. (U.S. Patent No. 6,299,388, hereinafter Levinson). Claims 1-14, 16-17 and 19-22 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Thorgerson et al (U.S. Patent No. 5,669,692, hereinafter Thorgerson) or Mori (U.S. Patent No. 4,510,555), in view of Caldwell (U.S. Patent No. 4,626,068), and in further view of Levinson.

II. Summary of Applicant's Amendments

The present Response amends Claims 1, 16, and 21, leaving for the Examiner's present consideration Claims 1-14, 16-17, and 19-22. Reconsideration of the application as amended is respectfully requested. Applicant reserves the right to prosecute any original or canceled claims in a continuing or future application.

III. Rejections under 35 U.S.C. § 102

In the Office Action mailed August 6, 2003, Claims 1, 4-11, 13-14, 16-17, 19, and 21-22 were rejected under 35 U.S.C. § 102(e) as being anticipated by Levinson (U.S. Patent No. 6,299,388).

Claim 1

Claim 1 has been amended by the present Response to more clearly define the embodiment of the invention therein. As amended, Claim 1 defines:

1. (Currently Amended) A light source comprising:
a substrate and a phosphor material that has a waveguide formed therein, the waveguide having a substantially planar shape and further having a waveguide direction along a longitudinal dimension and an exit region at an end of the longitudinal dimension; and
an excitation source that applies excitation energy to the waveguide in a direction substantially sheer or perpendicular to the plane of the waveguide such that light is generated within the phosphor material in a direction within or parallel to the waveguide direction, and exits through the exit region.

Applicant respectfully submits that Claim 1, as amended, is neither anticipated by nor obvious in view of the cited references.

Particularly, Applicant respectfully submits that the embodiment defined by Claim 1 is different from that disclosed in Levinson. Levinson discloses a decorative lighting apparatus, including a transmissive body 130 to which a light source 110 is coupled. (Column 2, lines 28-48). Substantially all of the light is transmitted through the transmissive body 130 by total internal reflection. (Column 2, lines 60-64). Formed on the transmissive body is a plurality of regions of luminescent material 140, for example a phosphor region. (Column 2, lines 66-67). The light propagates through the transmissive body until it is incident on one of the phosphor regions. The phosphor absorbs some fraction of the light and emits light of a different spectrum which is directed outside of the transmissive body 130 to produce a decorative effect. (Column 3, lines 6-14). Thus, Levinson discloses a system in which excitation energy (incident light) is directed through a transmissive conduit or light guide, to initiate a reaction and produce output light, wherein the output light is directed outside, i.e. emitted in a direction substantially perpendicular to the light guide.

Conversely, in the embodiment of the present invention defined by Claim 1, as amended, the operation of the waveguide is effectively the opposite of that of the device disclosed by Levinson. As defined by Claim 1, the light source includes a substrate and a phosphor material or film. The substrate and phosphor includes a waveguide formed within the phosphor, and having a substantially planar shape. Excitation energy is applied in a direction substantially sheer or perpendicular to the phosphor and the waveguide. The resulting generated light is generated within the plane of the phosphor and the waveguide.

Thus, in the embodiment of the present invention defined by Claim 1, the waveguide is formed within the plane of a phosphor material such as a film, which is different from the Levinson design in which the light guide is a merely a light-transmissive body that carries light to the phosphor regions. Furthermore, as defined by Claim 1, the excitation energy is applied sheer or perpendicular to the waveguide and the resulting generated light is generated parallel to or within the plane of the waveguide, whereas in the Levinson design the incident light is propagated through (i.e. within the plane of) the transmissive body, and the output light is emitted perpendicular to the plane of the transmissive body, via the phosphor regions.

Applicant respectfully submits that there would be no suggestion to modify the operation of the device disclosed in Levinson so as to anticipate or otherwise render obvious the invention, since the Levinson device requires the output light to be emitted at various points in a direction perpendicular to the waveguide, to provide a decorative effect. Conversely, the present invention allows the light to be generated within the plane of the waveguide and to be emitted only from a single exit region, resulting in a light of high brightness. This is a different application from the device disclosed in Levinson.

In view of the above comments, Applicant respectfully submits that Claim 1 is neither anticipated by, nor obvious in view of the cited references, taken alone or in combination, and reconsideration thereof is respectfully requested.

Claims 4-11, 13-14, and 17

The comments provided above with respect to Claim 1 are hereby incorporated by reference. Claims 4-11, 13-14, and 17 depend from and include all of the limitations and features of Claim 1. In view of the amendments to Claim 1 and accompanying remarks, Applicant respectfully submits that Claims 4-11, 13-14, and 17 are similarly neither anticipated by, nor obvious in view of the cited references, taken alone or in combination, and reconsideration thereof is respectfully requested.

Claim 16

The comments provided above with respect to Claim 1 are hereby incorporated by reference. Claim 16 has been similarly amended to more clearly define the embodiment of the invention therein. As amended, Claim 16 defines:

16. (Currently Amended) A light source comprising:
a phosphor film which has a substantially planar shape, and both a long dimension and a small cross-section, the phosphor film having at least one waveguide mode in the long dimension; and
an excitation source that directs excitation energy at the phosphor film in a direction substantially sheer or perpendicular to the direction of the long dimension such that light is generated in a waveguide mode within the long dimension and exits an exit region at the end of the long dimension.

In view of the amendments to Claim 16 and the remarks provided above with respect to Claim 1, Applicant respectfully submits that Claim 16, as amended, is neither anticipated by nor obvious in view of the cited references, and reconsideration thereof is respectfully requested.

Claim 19

Claim 19 depends from and includes all of the limitations and features of Claim 16. In view of the amendments to Claim 16 and accompanying remarks, Applicant respectfully submits that Claim 19 is similarly neither anticipated by, nor obvious in view of the cited references, taken alone or in combination, and reconsideration thereof is respectfully requested.

Claim 21

The comments provided above with respect to Claim 1 are hereby incorporated by reference. Claim 21 has been similarly amended to more clearly define the embodiment of the invention therein. As amended, Claim 21 defines:

21. (Currently Amended) A light source comprising:
a waveguide substrate having two dimensions on the order of a wavelength of emitted light, and a third dimension sufficiently long to produce a surface area on the order of many square centimeters; and
a phosphor film disposed on the waveguide substrate and having a waveguide direction parallel to the third dimension, the phosphor film having a guided mode such that excitation energy received by the phosphor film in a direction substantially sheer or perpendicular to the waveguide direction generates light in the phosphor film that travels in the phosphor film in the waveguide direction and exits as emitted light through an exit region along the waveguide direction.

In view of the amendments to Claim 21 and the remarks provided above with respect to Claim 1, Applicant respectfully submits that Claim 21, as amended, is neither anticipated by nor obvious in view of the cited references, and reconsideration thereof is respectfully requested.

Claim 22

Claim 22 depends from and includes all of the limitations and features of Claim 21. In view of the amendments to Claim 21 and accompanying remarks, Applicant respectfully submits that Claim 22 is similarly neither anticipated by, nor obvious in view of the cited references, taken alone or in combination, and reconsideration thereof is respectfully requested.

IV. Rejections under 35 U.S.C. § 103

In the Office Action mailed August 6, 2003, Claims 1-14, 16-17 and 19-22 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Thorgerson (U.S. Patent No. 5,669,692) or Mori (U.S. Patent No. 4,510,555), in view of Caldwell (U.S. Patent No. 4,626,068), and in further view of Levinson (U.S. Patent No. 6,299,388).

Claims 1-14, 17

The comments provided above with respect to Claim 1 are hereby incorporated by reference. In view of the amendments to Claim 1 and accompanying remarks, Applicant

respectfully submits that Claim 1, and Claims 2-14, 17 dependent therefrom, are neither anticipated by, nor obvious in view of the cited references, taken alone or in combination, and reconsideration thereof is respectfully requested.

Claims 16, 19-20

The comments provided above with respect to Claim 16 are hereby incorporated by reference. In view of the amendments to Claim 16 and accompanying remarks, Applicant respectfully submits that Claim 16, and Claims 19-20 dependent therefrom, are neither anticipated by, nor obvious in view of the cited references, taken alone or in combination, and reconsideration thereof is respectfully requested.

Claims 21, 22

The comments provided above with respect to Claim 21 are hereby incorporated by reference. In view of the amendments to Claim 21 and accompanying remarks, Applicant respectfully submits that Claim 21, and Claim 22 dependent therefrom, are neither anticipated by, nor obvious in view of the cited references, taken alone or in combination, and reconsideration thereof is respectfully requested.

V. Additional Amendments

In light of the above, it is respectfully submitted that all of the claims now pending in the subject patent application should be allowable, and reconsideration thereof is respectfully requested. The Examiner is respectfully requested to telephone the undersigned if he can assist in expediting the issuance of a patent, and before an advisory action is issued in order to avoid any unnecessary filing of an appeal.


Enclosed is a PETITION FOR EXTENSION OF TIME UNDER 37 C.F.R. § 1.136 for extending the time to respond up to and including today, February 6, 2004.

Application No.: 09/855,254
Amendment dated: February 6, 2004
Reply to OA dated: August 6, 2003

The Commissioner is authorized to charge any underpayment or credit any overpayment to Deposit Account No. 06-1325 for any matter in connection with this response, including any fee for extension of time, which may be required.

Respectfully submitted,

Date: February 6, 2004

By: 
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